CLAIMS

1. Process for writing a Bragg grating in a transparent substrate (36) forming a light guide, particularly in an optical fiber, the Bragg grating forming a spectral filter with regard to a light wave that passes through it, process according to which the interference pattern between two light beams (28, 30) with the same wavelength and coherent with each other but with an angular offset, is transferred directly into the substrate due to a photosensitivity phenomenon within the same said substrate, this interference pattern being transferred in the substrate in the form of a modulation of the refraction index of this substrate, this process being characterized in that at least one of the said light beams is divided into at least two sub-beams offset in phase with respect to each other.

2. Process according to claim 1, in which the interference pattern is transferred according to an amplitude separation configuration.

3. Process according to claim 1, in which the interference pattern is transferred according to a wave front separation configuration.

4. Process according to any one of claims 1 to 3, in which the position of the phase shift or the value of this phase shift or the position and value of this

phase shift in the light beam formed by the two sub-beams, can be modified with time.

5. Apparatus for use of the writing process according to claim 1, this apparatus being characterized in that it comprises:

- at least one phase splitter (42) capable of creating a phase shift between at least two sub-beams, due to a difference in the optical path, and
- a means (61) of adjusting the position of the phase splitter, this adjustment means having at least two degrees of freedom, one being angular degree of freedom provided for adjustment of the value of the phase shift, and the other being a translation degree of freedom provided for adjustment of the position of the phase shift in the light beam formed by the two sub-beams.

6. Apparatus according to claim 5, also comprising interferometric means with two or three mirrors (32, 34) for transferring the interference pattern according to an amplitude separation configuration.

7. Apparatus according to claim 5, also comprising interferometric means with a prism (46) or a Lloyd folded mirror (64) for transferring the interference pattern according to a wave front separation configuration.

8. Phase skip Bragg grating with high spectral selectivity obtained by the process according to claim 1, the phase shift between the two sub-beams advantageously being equal to π.

9. Bragg grating obtained by the process according to claim 1, this Bragg grating being identical to a pre-written Bragg grating and being written on this pre-written grating, at the same position, with a phase change of π over the entire length of the pre-written grating, to erase all or some of the original grating in order to obtain a given reflection coefficient.

10. Fabry-Perot cavity delimited by two Bragg gratings at different positions in space, these two Bragg gratings being obtained by the process according to claim 1.

11. Bragg grating with a determined index modulation envelope, particularly an apodized Bragg grating, obtained by the process according to claim 1, by successively writing two Bragg gratings comprising parts in phase opposition, the time taken to overwrite one Bragg grating by the other being variable, to give a variable phase shift and a variable value of the phase shift.

12. Bragg grating according to claim 11, the position of the phase shift being displaced by a programmable movement.

add A1
add E37